**Amendments to the Claim:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) A microarray comprising a plurality of single stranded nucleic acid probes immobilized in discrete areas of a solid support, said probes being hybridized to a library of complexes,

wherein each complex comprises an encoded molecule and a template which identifies said encoded molecule, and, if a complex comprises more than one encoded molecule, the encoded molecules of that complex are identical,

said template comprising a plurality of codons,

said encoded molecule comprising a plurality of structural units, the number of codons in the template equaling the number of structural units in the encoded molecule complexed with that template, each codon in a given template identifying a structural unit in the encoded molecule with which it is complexed,

wherein said encoded molecules collectively provide a plurality of chemically distinct structural units and said templates collectively provide a plurality of chemically distinct codons,

wherein each chemically distinct codon identifies one and only one chemically distinct structural unit,

wherein each encoded molecule is a non-polymeric molecule comprising a core structure and a plurality of structural units, each structural unit being at a particular structural position,

~~wherein the encoded molecules are not nucleic acids, and~~

~~wherein at least one encoded molecule is not a protein composed solely of one or more of the 20 genetically encoded amino acids~~.

2. (Currently Amended) A microarray according to claim 1, wherein each encoded molecule is obtained by a process comprising the simultaneous or sequential reaction of each of two or more chemical entities with a reactive group of a scaffold having a plurality of reactive groups, wherein each chemical entity is a precursor for a structural unit appearing in the encoded molecule, and said scaffold is the precursor for said core structure.

3. (Previously Presented) A microarray according to claim 25, wherein the chemical entities are transferred to the nascent encoded molecule by a building block, which further comprises an anti-codon.

4. (Original) A microarray according to claim 3, wherein the information of the anti-codon is transferred in conjunction with the chemical entity to the nascent complex.

5. (Previously Presented) A microarray according to claim 2, wherein the chemical entities are reacted without enzymatic interaction.

6. (Cancelled)

7. (Previously Presented) A microarray according to claim 1, wherein the nucleic acid probe of the array is hybridized to a template through an adapter oligonucleotide having a sequence complementing the probe as well as the template.

8. (Withdrawn) A method for preparing the microarray of claim 1, wherein an oligonucleotide microarray comprising a plurality of single stranded nucleic acid probes immobilized in discrete areas of a solid support is mixed under conditions which allows for specific hybridization with a library of complexes, each of said complexes comprising an encoded molecule and a template which codes for said molecule,.

9. (Withdrawn) A method for identifying an encoded molecule having a preselected property, comprising the steps of

i) providing the microarray according to claim 22,

ii) adding a biological sample containing target molecules,
iii) washing non-bound material off, and
iv) detecting any bound material in each spot.

10-11. (Cancelled)

12. (Previously Presented) A microarray according to claim 25, wherein each nascent encoded molecule forms a nascent complex with a nascent template consisting essentially of the codons identifying the structural units of said nascent encoded molecule, wherein the information of the anti-codon is transferred in conjunction with the chemical entity to the nascent complex.

13-14. (Cancelled)

15. (Previously Presented) A microarray according to claim 2, wherein the nucleic acid probe of the array is hybridized to a template through an adapter oligonucleotide having a sequence complementing the probe as well as the template.

16. (Previously Presented) A microarray according to claim 25, wherein the chemical entities are reacted without enzymatic interaction.

17. (Cancelled)

18. (Previously Presented) A microarray according to claim 25, wherein the nucleic acid probe of the array is hybridized to a template through an adapter oligonucleotide having a sequence complementing the probe as well as the template.

19. (Previously Presented) A microarray according to claim 3, wherein the chemical entities are reacted without enzymatic interaction.

20. (Cancelled)

21. (Previously Presented) A microarray according to claim 3, wherein the nucleic acid probe of the array is hybridized to a template through an adapter oligonucleotide having a sequence complementing the probe as well as the template.

22. (Previously Presented) The microarray of claim 1

wherein the codons are DNA codons.

23. (Previously Presented) The microarray of claim 1 wherein at least one codon is a DNA codon.

24. (Cancelled)

25. (Previously Presented) The microarray of claim 2 wherein said microarray is obtained by a process comprising reacting at least two chemical entities to obtain a nascent encoded molecule, and reacting a nascent encoded molecule with at least one chemical entity to obtain an encoded molecule.

26. (Previously Presented) The array of claim 1 wherein the structural position of each codon within a template identifies the structural position of the corresponding structural unit identified by said codon within the encoded molecule with which said template is complexed.

27. (Previously Presented) The array of claim 26 wherein, all of the complexes exhibit the same relationship between the structural positions of the codons of the template in a complex and the structural positions of the corresponding structural units in the encoded molecule in the same complex.

28. (Previously Presented) The array of claim 27 wherein the template is linear.

29. (Previously Presented) The array of claim 1 wherein each chemically distinct structural unit is identified by one and only one chemically distinct codon.

30. (Previously Presented) The array of claim 1, wherein the templates are nucleic acids.

31. (Previously Presented) The array of claim 30, wherein the codons are all composed of the same number of nucleotides.

32. (Previously Presented) The array of claim 1, wherein each template is three or more codons.

33. (Previously Presented) the array of claim 31, wherein each codon is 3-30 nucleotides.

34. (Previously Presented) The array of claim 1, wherein the connection between structural units is selected from the group consisting of -O-, -S-, -NH-, -NR-, -NH-C(<)-C(<)-O-, -

C(=S)-NH-, >C=N-O-, $-SO_2-N<$, -C(-Z)(-Z')- C(=O)-, and -C(-Z)(-Z')-C(=O)-, wherein Z and Z' are independently selected from the group consisting of COOR, CHO, COR, $CONR"_2$, COO-, $NO_2$, SOR, $SO_2R$, $SO_2NR"_2$ and CN.

35. (Currently Amended) The microarray of claim 1, said templates comprising one or more spacer sequences identifying the structural position in the encoded molecule of the structural unit(s) identified by of one or more codons within said template.

36. (Previously Presented) The microarray of claim 1, said templates comprising flanking sequences in the form of priming sites for PCR amplification.

37. (Currently Amended) ~~the~~ The microarray of claim 25, wherein said microarray is obtained by a process comprising

a) providing a solid support,

b) providing a plurality of single stranded nucleic acid probes,

c) immobilizing the nucleic acid probes in discrete areas of the solid support,

d) hybridizing the nucleic acid probes to templates of a library of complexes each comprising a molecule and a template identifying the molecule,

wherein the complexes of the library are produced by a method comprising the steps of

i) reacting a plurality of chemical entities without enzymatic interaction, thereby generating the molecule of the complexes, and

ii) linking each molecule, or a precursor thereof, to a template,

wherein the template is divided into codons,

wherein each codon identifies a chemical entity which has reacted with one or more other chemical entities to form the molecule.

38 (Cancelled).

39 (New). The microarray of claim 1, wherein each codon is at least 6 nucleotides.

40 (New). The microarray of claim 1, wherein each encoded molecule is obtained by a process comprising reacting each of at least three chemical entities, simultaneously or sequentially, with a reactive group of a scaffold having at least three reactive groups, wherein each chemical entity is a precursor for a structural unit appearing in the encoded molecule, whereby each encoded molecule comprises at least three structural units, each unit being connected to the scaffold or a reaction residue thereof.

41 (New). The microarray of claim 1, wherein none of the structural units is one of the twenty genetically encoded amino acid residues.

42 (New). The microarray of claim 1, wherein none of the structural units is an amino acid residue.

43 (New). The microarray of claim 1, wherein the library collectively provides a number of chemically distinct codons which is equal to the number of chemically distinct structural units.

44 (New). The microarray of claim 1, wherein all of said encoded molecules comprise the same core structure, but the encoded molecules collectively exhibit variation in the choice of structural unit at each of a plurality of said structural positions.

45 (New) The microarray of claim 1 wherein each complex is characterized by one and only one encoded molecule and one and only one template.

46 (New). The microarray of claim 1 wherein the encoded molecules are small molecules of a molecular weight not greater than that of the peptide RGD.

47 (New). The microarray of claim 1 wherein the encoded molecules are small molecules of a molecular weight not greater than that of the peptide RRR.

48. (New) A microarray comprising a plurality of single stranded nucleic acid probes immobilized in discrete areas of a solid support, said probes being hybridized to a library of

complexes,

wherein each complex comprises an encoded molecule and a template which identifies said encoded molecule, and, if a complex comprises more than one encoded molecule, the encoded molecules of that complex are identical,

said template comprising a plurality of codons,

said encoded molecule comprising a plurality of structural units, the number of codons in the template equaling the number of structural units in the encoded molecule complexed with that template, each codon in a given template identifying a structural unit in the encoded molecule with which it is complexed,

wherein said encoded molecules collectively provide a plurality of chemically distinct structural units and said templates collectively provide a plurality of chemically distinct codons,

wherein each chemically distinct codon identifies one and only one chemically distinct structural unit,

wherein the encoded molecules are not nucleic acids, and

wherein the encoded molecules are not peptides.

49 (New). The microarray of claim 48 wherein said library collectively provides at least about $10^3$ different encoded molecules.